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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CROW, ROBERT THOMAS

ART UNIT	PAPER NUMBER
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1634

DATE MAILED: 06/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/501,691	Applicant(s) ODA ET AL.	
	Examiner Robert T. Crow	Art Unit 1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Information Disclosure Statement

The Information Disclosure Statements filed 7 July 2004, 28 September 2004, and 12 September 2005 are acknowledged. However, only the Abstracts of WO 01/62963 and of Japanese documents 08-023975, 01-242965, 10-104230, 2001-083163, 2001-136968, and 2001-281246 are being considered because English translations of the remainder of the documents have not been provided.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-3 and 5-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Jacobsen et al (U.S. Patent No. 6,033,784, issued 7 March 2000).

Regarding claim 1, Jacobsen et al teach a method for immobilizing a biomolecule on a carrier, comprising the steps of spotting a solution of the biomolecule on the carrier (e.g., a solution of a peptide compound that is N-terminally anthraquinone substituted was added to each well of a substrate; column 22, lines 22-30) and irradiating the carrier spotted with the solution of the biomolecule with an ultraviolet ray (e.g., the plate is irradiated under a UV lamp; column 22, lines 29-31) containing a component having a wavelength of 280 nm (e.g., wavelengths in the range of 190-820 nm; column 19, lines 47-67), wherein the carrier is made of a synthetic resin (e.g., the plate is a Nunc-Immuno® plate [column 22 lines 25-30], wherein the Nunc-Immuno® plate is polystyrene; column 11, lines 21-26).

Regarding claims 2 and 3, Jacobsen et al teach the method of claim 1, wherein the resin is polystyrene (e.g., the Nunc-Immuno® plate is polystyrene; column 11, lines 21-26).

Regarding claim 5, Jacobsen et al teach the method of claim 1, wherein the biomolecule is a peptide (e.g., a peptide compound that is N-terminally anthraquinone substituted; column 22, lines 22-30).

Regarding claim 6, Jacobsen et al teach a method for producing a biomolecule immobilized carrier in which a biomolecule is immobilized on a carrier, comprising the steps of spotting a solution of the biomolecule on the carrier (e.g., a solution of a peptide compound that is N-terminally anthraquinone substituted was added to each well of a substrate; column 22, lines 22-30) and irradiating the carrier spotted with the solution of

the biomolecule with an ultraviolet ray (e.g., the plate is irradiated under a UV lamp; column 22, lines 29-31) containing a component having a wavelength of 280 nm to immobilize the biomolecule on the carrier (e.g., wavelengths in the range of 190-820 nm; column 19, lines 47-67).

2. Claims 1 and 5-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Zimlich et al (U.S. Patent No. 5,288,647, issued 22 February 1994).

Regarding claim 1, Zimlich et al teach a method for immobilizing a biomolecule on a carrier, comprising the steps of spotting a solution of the biomolecule on the carrier (e.g., a polynucleotide is disposed on a substrate; column 4, lines 35-37), and irradiating the carrier spotted with the solution of the biomolecule with an ultraviolet ray (column 4, lines 35-42) having a wavelength of 280 nm (e.g., a wavelength between 200 and 290 nm; column 10, lines 58-60), wherein the carrier is a synthetic resin (e.g., nylon; column 6, lines 40-42).

Regarding claim 4, Zimlich et al teach the method of claim 1, wherein the irradiation dose is more than 100 mJ/cm² (i.e., 1.29 kJ/m², which is 129 mJ/cm²; column 6, lines 42-45).

Regarding claim 5, Zimlich et al teach the method of claim 1, wherein the biomolecule is a nucleic acid (e.g., a polynucleotide is disposed on a substrate; column 4, lines 35-37).

Regarding claim 6, Zimlich et al teach a method for producing a biomolecule immobilized carrier in which a biomolecule is immobilized on a carrier (e.g., a DNA specimen crosslinked to a substrate; Abstract), comprising the steps of spotting a solution of the biomolecule on the carrier (e.g., a polynucleotide is disposed on a substrate; column 4, lines 35-37), and irradiating the carrier spotted with the solution of the biomolecule with an ultraviolet ray (column 4, lines 35-42) having a wavelength of 280 nm to immobilize the biomolecule on the carrier (e.g., a wavelength between 200 and 290 nm; column 10, lines 58-60).

Regarding claim 7, Zimlich et al teach the method of claim 6, wherein the biomolecule is a nucleic acid (e.g., a DNA specimen crosslinked to a substrate; Abstract), and the nucleic acid immobilized carrier is used for analysis of the nucleic acid by hybridization (e.g., probes on nylon membranes are hybridized; column 1, lines 15-25).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1, 4, and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobsen et al (U.S. Patent No. 6,033,784, issued 7 March 2000) in view of Zimlich et al (U.S. Patent No. 5,288,647, issued 22 February 1994).

Regarding claim 4, Jacobsen et al teach the method for immobilizing a biomolecule on a carrier of claim 1, comprising the steps of spotting a solution of the biomolecule on the carrier (e.g., a solution of a peptide compound that is N-terminally anthraquinone substituted was added to each well of a substrate; column 22, lines 22-30) and irradiating the carrier spotted with the solution of the biomolecule with an ultraviolet ray (e.g., the plate is irradiated under a UV lamp; column 22, lines 29-31) containing a component having a wavelength of 280 nm (e.g., wavelengths in the range of 190-820 nm; column 19, lines 47-67), wherein the carrier is made of a synthetic resin (e.g., the plate is a Nunc- Immuno ® plate [column 22 lines 25-30], wherein the Nunc-

Immuno ® plate is polystyrene; column 11, lines 21-26). Jacobsen et al are silent with respect to the dose.

However, Zimlich et al teach a method for immobilizing a biomolecule on a carrier, comprising the steps of spotting a solution of the biomolecule on the carrier (e.g., a polynucleotide is disposed on a substrate; column 4, lines 35-37), and irradiating the carrier spotted with the solution of the biomolecule with an ultraviolet ray (column 4, lines 35-42) wherein the irradiation dose is more than 100 mJ/cm² (i.e., 1.29 kJ/m², which is 129 mJ/cm²; column 6, lines 42-45) with the added advantage that the irradiation dose produces good results even with variations in the substrate and other conditions (column 6, lines 42-45).

It would therefore have been obvious to a person of ordinary skill in the art at the time the invention was claimed to have modified the method as taught by Jacobsen et al with the irradiation dose as taught by Zimlich et al with a reasonable expectation of success. The ordinary artisan would have been motivated to make such a modification because said modification would have produced good results even with variations in the substrate and other conditions as explicitly taught by Zimlich et al (column 6, lines 42-45).

Regarding claim 7, Jacobsen et al teach a method for producing a biomolecule immobilized carrier of claim 6 in which a biomolecule is immobilized on a carrier, comprising the steps of spotting a solution of the biomolecule on the carrier (e.g., a solution of a peptide compound that is N-terminally anthraquinone substituted was

added to each well of a substrate; column 22, lines 22-30) and irradiating the carrier spotted with the solution of the biomolecule with an ultraviolet ray (e.g., the plate is irradiated under a UV lamp; column 22, lines 29-31) containing a component having a wavelength of 280 nm to immobilize the biomolecule on the carrier (e.g., wavelengths in the range of 190-820 nm; column 19, lines 47-67). Jacobsen et al are silent with respect to hybridization.

However, Zimlich et al teach a method for producing a biomolecule immobilized carrier in which a biomolecule is immobilized on a carrier (e.g., a DNA specimen crosslinked to a substrate; Abstract), comprising the steps of spotting a solution of the biomolecule on the carrier (e.g., a polynucleotide is disposed on a substrate; column 4, lines 35-37), and irradiating the carrier spotted with the solution of the biomolecule with an ultraviolet ray (column 4, lines 35-42) wherein the biomolecule is a nucleic acid (e.g., a DNA specimen crosslinked to a substrate; Abstract), and the nucleic acid immobilized carrier is used for analysis of the nucleic acid by hybridization (e.g., probes on nylon membranes are hybridized; column 1, lines 15-25) with the added advantage that hybridization allows DNA sequencing (column 1, lines 15-20).

It would therefore have been obvious to a person of ordinary skill in the art at the time the invention was claimed to have modified the method as taught by Jacobsen et al with the hybridization as taught by Zimlich et al with a reasonable expectation of success. The ordinary artisan would have been motivated to make such a modification

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because said modification would have allowed DNA sequencing as explicitly taught by Zimlich et al (column 1, lines 15-20).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-7 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7 of copending Application No. 10/535,582 in view of Grow (U.S. Patent No. 5,866,430, issued 2 February 1999). Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims are drawn to method of immobilization of biomolecules comprising irradiation at 280 nm (i.e., the range of 220 nm to 300 nm of

the '582 claims), irradiation doses of 100 mJ/cm² or more, hybridization, and nucleic acids. The instant claims are silent with respect to metal carriers.

However, Grow teach immobilization of biomolecules on a biosensor (column 17, lines 40-47) on metal carriers (e.g., a thin layer of metal) with the added advantage that metal carriers result in a billion-fold enhancement of detection of adsorbed molecules (column 3, lines 20-33).

It would therefore have been obvious to a person of ordinary skill in the art at the time the invention was claimed to have modified the device of the instant claims with the metal carrier as taught by Grow with a reasonable expectation of success. The ordinary artisan would have been motivated to make such a modification because said modification would have resulted in a billion-fold enhancement of detection of adsorbed molecules as explicitly taught by Grow (column 3, lines 20-33).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert T. Crow whose telephone number is (571) 272-


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1113. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Robert T. Crow
Examiner
Art Unit 1634


6/13/06


BJ FORMAN, PH.D.
PRIMARY EXAMINER